

APPENDIX:

The Appendix includes the following item(s) :

- a Replacement Sheet for Figures 8 and 9 of the drawings
- verified English translation of JP 2000-314199



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VERIFICATION OF TRANSLATION

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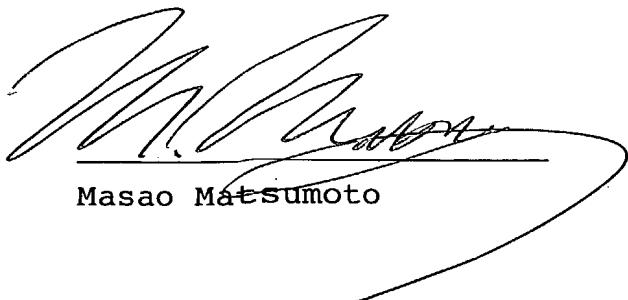
declare as follows:

1. That I am well acquainted with both the English and Japanese languages, and
2. That the attached document is a true and correct translation made by me to the best of my knowledge and belief of:-

The specification accompanying the Application No. 2000-314199
for a patent made in Japan

filed on October 13, 2000.

November 19, 2004



Masao Matsumoto



PATENT OFFICE
JAPANESE GOVERNMENT

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This is to certify that the annexed is a true copy of the following application as filed with this Office.

Dated of Application : October 13, 2000

Application Number : Patent Application No.
2000-314199

Applicant(s) : NEC Corporation

August 17, 2001

Commissioner, Kozo OIKAWA
Patent Office

Certificate No. 2001-3072817



[THE NAME OF DOCUMENT] PATENT APPLICATION

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[REFERENCE NUMBER] 01901732

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[FILING DATE] October 13, 2000

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[DESTINATION] DIRECTOR-GENERAL PATENT OFFICE

[IPC CLASSIFICATION] G11B 17/02

[TITLE ON INVENTION] DISK DRIVE UNIT AND INFORMATION
PROCESSING DEVICE

[THE NUMBER OF CLAIMS] 8

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[OFFICIAL FEE]

[HOW TO PAY] PREPAYMENT

[NUMBER OF PREPAYMENT LEDGER] 043591

[AMOUNT OF PAYMENT] 21000

[THE LIST OF FILING OBJECT]

[THE NAME OF OBJECT] Specification 1

[THE NAME OF OBJECT] Drawing 1

[THE NAME OF OBJECT] Abstract 1

[NEEDS OF PROOF] NEED

[THE NAME OF DOCUMENT]

SPECIFICATION

[TITLE OF THE INVENTION]

DISK DRIVE UNIT AND

INFORMATION PROCESSING DEVICE

[CLAIM]

[CLAIM 1] A disk drive unit with which a disk medium is to be mounted for access, wherein in the vicinity of a disk insertion and discharge slot of a panel into and from which said disk medium is inserted and discharged, a felt member for blindfolding is provided which has a slit for insertion of the disk medium along a longitudinal direction of said discharge slot, further comprising,

a plurality of slits are provided for every predetermined interval in a direction perpendicular to said slit of said felt member.

[CLAIM 2] The disk drive unit having the disk insertion and discharge slot of a panel into and from which said disk medium is inserted and discharged, wherein

a convex portion is provided at an edge portion of said disk insertion and discharge slot so as to face said disk medium.

[CLAIM 3] The disk drive unit as set forth in claim 2, wherein

only a part of a data surface of said disk medium comes into contact with said convex portion.

[CLAIM 4] The disk drive unit having a disk

insertion and discharge slot of a panel into and from which a disk medium is inserted and discharged, wherein a roller ratably is provided at an edge portion of said disk insertion and discharge slot so as to face said disk medium,

only a part of said disk medium comes into contact with said roller.

[CLAIM 5] The disk drive unit as set forth in claim 4, wherein

only a part of a data surface of said disk medium comes into contact with said roller.

[CLAIM 6] An information processing device with which a disk medium is to be mounted for access, wherein in the vicinity of a disk insertion and discharge slot of a panel into and from which said disk medium is inserted and discharged, a felt member for blindfolding is provided which has a slit for insertion of the disk medium along a longitudinal direction of said discharge slot, further comprising,

a plurality of slits are provided for every predetermined interval in a direction perpendicular to said slit of said felt member.

[CLAIM 7] The information processing device having a disk insertion and discharge slot of a panel into and from which a disk medium is inserted and discharged, wherein

a convex portion is provided at an edge portion

of said disk insertion and discharge slot so as to face said disk medium.

[CLAIM 8] The information processing device having a disk insertion and discharge slot of a panel into and from which a disk medium is inserted and discharged, wherein

a roller ratably is provided at an edge portion of said disk insertion and discharge slot so as to face said disk medium,

only a part of said disk medium comes into contact with said roller.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[FIELD OF THE INVENTION]

The present invention relates to a disk drive unit and an information processing device and, more particularly, to a disk drive unit which facilitates insertion and discharge of such disk as a DVD-ROM disk and to an information processing device using the same.

[0002]

[PRIOR ART]

Many of conventional information processing devices employ disk drive unit such as a DVD-ROM drive unit which can be automatically inserted and discharged, and a disk insertion and discharge slot of a DVD-ROM drive unit is in many cases mounted with a panel for a drive unit unique to a manufacturer.

[0003]

When a new disk medium whose outer peripheral portion is too roughly finished to make the edge sandy is inserted into a conventional DVD-ROM drive unit which can be automatically inserted and discharged, there occurs a case where the disk is caught by a felt for dust prevention/blindfolding provided in the vicinity of a disk insertion and discharge slot when the disk pushes to open and pass through a slit of the felt. Then, there is a case where catching resistance between the disk and the felt is larger than medium discharging force of the DVD-ROM drive unit and in this case, the disk will not be discharged but return into the drive unit again or it will stop halfway.

[0004]

In addition, further trouble would occur that when a disk is drawn by hand to discharge from a disk unit, a disk data surface might come into contact with an insertion and discharge slot to cause scratches, thereby inviting danger of disabling data read.

[0005]

[PROBLEMS TO BE SOLVED BY THE INVENTION]

An object of the present invention is provide a novel disk drive unit or information processing device which enables improvement in the above-described problems of conventional disk drive units and prevents troubles from occurring when a disk is inserted into or

discharged from the device.

[0006]

Another object of the present invention is to provide a novel disk drive unit or information processing device which prevents a disk from having scratches when inserted into or discharged from the device.

[0007]

[MEANS TO SOLVE THE PROBLEM]

This invention has the following technical configurations fundamentally in order to accomplish the above-mentioned object.

[0008]

In the first aspect of a disk drive unit according to the invention, the disk drive unit with which a disk medium is to be mounted for access, wherein in the vicinity of a disk insertion and discharge slot of a panel into and from which said disk medium is inserted and discharged, a felt member for blindfolding is provided which has a slit for insertion of the disk medium along a longitudinal direction of said discharge slot, further comprising,

a plurality of slits are provided for every predetermined interval in a direction perpendicular to said slit of said felt member.

In the second aspect, the disk drive unit having the disk insertion and discharge slot of a panel

into and from which said disk medium is inserted and discharged, wherein a convex portion is provided at an edge portion of said disk insertion and discharge slot so as to face said disk medium.

In the third aspect, the disk drive unit, wherein only a part of a data surface of said disk medium comes into contact with said convex portion.

In the fourth aspect, the disk drive unit having a disk insertion and discharge slot of a panel into and from which a disk medium is inserted and discharged, wherein

a roller ratably is provided at an edge portion of said disk insertion and discharge slot so as to face said disk medium,

only a part of said disk medium comes into contact with said roller.

In fifth aspect, only a part of a data surface of said disk medium comes into contact with said roller.

[0009]

In the first aspect of an information processing device according to the invention, the information processing device with which a disk medium is to be mounted for access, wherein in the vicinity of a disk insertion and discharge slot of a panel into and from which said disk medium is inserted and discharged, a felt member for blindfolding is provided which has a

slit for insertion of the disk medium along a longitudinal direction of said discharge slot, further comprising,

a plurality of slits are provided for every predetermined interval in a direction perpendicular to said slit of said felt member.

In the second aspect, the information processing device having a disk insertion and discharge slot of a panel into and from which a disk medium is inserted and discharged, wherein

a convex portion is provided at an edge portion of said disk insertion and discharge slot so as to face said disk medium.

In the third aspect, the information processing device having a disk insertion and discharge slot of a panel into and from which a disk medium is inserted and discharged, wherein

a roller ratably is provided at an edge portion of said disk insertion and discharge slot so as to face said disk medium, only a part of said disk medium comes into contact with said roller.

[0010]

[THE EMBODIED CONFIGURATION OF THE INVENTION]

With vertical slits provided in a felt member for the insertion and discharge of a disk medium which is disposed at a panel located at the front side of a disk drive unit to enable the felt member to turn over

with ease so that the disk medium is allowed to push and open the felt member with ease, thereby decreasing catching resistance between the disk medium and the felt member as much as possible, the present invention enables insertion and discharge of a disk medium to be conducted with ease and reliably.

[0011]

In addition, with a protrusion for scratch prevention provided on the panel of the disk drive unit to prevent a data surface of the disk from coming into contact with other portions than the protrusion, the data surface of the disk is free from scratches.

[0012]

[EMBODIMENT]

In the following, examples of a disk drive unit and an information processing device according to the present invention will be described in detail with reference to the drawings.

[0013]

(FIRST EXAMPLE)

Figs. 1 to 7 are views showing a structure of a first example of a disk drive unit according to the present invention. Shown in these figures is a disk drive unit 2 having a cloth member 4 for blindfolding disposed in the vicinity of a disk insertion and discharge slot 3 through which a disk medium 1 such as a DVD-ROM disk is inserted and discharged into and

from the disk drive unit 2 and having a slit 5 provided in the cloth member 4 through which slit the disk medium 1 is inserted in the longitudinal direction of the discharge slot 3, in which a plurality of slits 6 are disposed for every predetermined interval in a direction perpendicular to the slit 5. In addition, a patch 10 for scratch prevention having a convex portion 9 is provided at an edge portion 3a of the disk insertion and discharge slot 3 so as to face the disk medium 1.

[0014]

In this case, the convex portion 9 of the patch 10 for scratch prevention is formed to come into contact only with a part of a data surface of the disk medium 1.

[0015]

In the following, the first example will be described in more detail.

[0016]

The disk drive unit according to the first example, as shown in Figs. 1 and 2, includes the patch 10 for preventing scratches of the disk medium 1 on which patch the convex portion 9 is formed, the felt 4 for dust prevention/blindfolding, an operation button 13 for discharging the DVD disk and a panel 14 for incorporating these components.

[0017]

Fig. 2 is an expanded view of the patch 10 for preventing scratches of the disk medium. Formed on a medium contact surface of the patch 10 for preventing scratches of the disk is the spherical convex portion 9. The patch 10 for scratch prevention is formed of a material whose hardness is lower than that of the DVD-ROM disk 1 in order to be less likely to be deformed and to be scratched when force is applied and is attached to the edge portion 3a of the disk insertion and discharge slot 3 of the panel 14 so as to face the disk medium 1.

[0018]

Fig. 3 is an expanded view of the felt 4 for dust prevention/blindfolding. The felt 4 includes the long horizontal slit 5 for disk insertion and the plurality of vertical slits 6 perpendicular to the horizontal slit 5 and is attached to the back surface of the panel 14 by a double adhesive tape. The purpose of the provision of the vertical slits 6 provided in the felt 4 is to facilitate falling of the felt 4 toward the moving direction of the disk medium 1 and to make catching resistance between the disk medium 1 and the felt 4 be smaller than the medium discharging force of the DVD-ROM disk drive unit when the disk medium 1 pushes to open and pass through the horizontal slit 5 of the felt 4.

[0019]

Fig. 4 is a sectional view of a part of the disk insertion and discharge slot 3 of the panel 14 in which the patch 10 for scratch prevention is fit. As shown in Fig. 4(a), the patch 10 is attached such that the spherical convex portion 9 of the patch 10 for preventing scratches of the disk medium 1 slightly projects from the edge portion 3a of the discharge slot 3 of the panel 4 and such that when the DVD-ROM disk medium 1 bends over from the normal position at the insertion or discharge of the DVD-ROM disk 1, only a part of the data surface of the disk medium 1 comes into contact with the convex portion 9 to prevent contact of the entire data surface of the disk medium 1 with the edge portion 3a of the discharge slot 3.

[0020]

On the other hand, in a case of a conventional panel structure, as shown in Fig. 4(b), because of lack of the patch 10 for scratch prevention, when the disk medium 1 deviates from the normal position at the insertion or discharge of the disk medium 1, the data surface of the disk comes into direct contact with the edge portion 3a of the insertion and discharge slot 3 of the panel 4, which causes scratches on the data surface of the disk medium 1.

[0021]

Fig. 5 is a view showing a state where the panel 14 having scratch prevention means according to

the present invention is attached to the disk drive unit 2 such as a DVD-ROM. The felt 4 disposed at the DVD-ROM insertion and discharge slot 3 is provided with the vertical slits 6 and has the patch 10 for preventing scratches of a disk.

[0022]

Figs. 6 are views showing a DVD-ROM disk is on the way to discharge from the disk drive unit according to the present invention and from a conventional disk drive unit.

[0023]

In a case of the disk drive unit shown in Fig. 6(a), at the discharge of a DVD-ROM disk, when the disk medium 1 pushes to open and pass through the felt 4, the felt 4 bends at a part of the vertical slit portion 6 to suppress a wide range of turning-over of the felt 4 because of the effects of the vertical slits 6 formed in the felt 4.

[0024]

On the other hand, in a case of the conventional disk drive unit shown in Fig. 6(b), in spite of the position of the disk medium 1 being the same as that in Fig. 6(a), at the discharge of the DVD-ROM disk, turning-over of the felt 4 is caused in a wide range because the felt 4 has no vertical slit. When the felt 4 turns over at the outer periphery of the disk, because of a combination with a new medium

which makes the outer periphery (edge) sandy, the sandy part and the turned over part cause frictional resistance to result in some cases in that catch of the disk medium 1 and the felt 4 becomes larger than medium discharging force, causing such troubles as described above to occur.

[0025]

Fig. 7 is a view showing a notebook-sized personal computer 20 which is one example of an information processing device using the disk drive unit of the present invention. It is clear that the present invention is also applicable to a stationary information processing device.

[0026]

(SECOND EXAMPLE)

Figs. 8 to 9 are views showing a structure of a disk drive unit according to a second example of the present invention. According to the present example, a disk drive unit, which is provided with the disk insertion and discharge slot 3 for inserting and discharging the disk medium 1, is structured to have a rotatable roller 15 in the vicinity of the edge portion 3a of the disk insertion and discharge slot 3 so as to face the disk medium 1 such that the roller 15 comes into contact only with a part of the disk medium 1.

[0027]

Also in this case, the roller 15 is designed to

come into contact only with a part of the data surface of the disk medium 1.

[0028]

In the following, the second example will be described in more detail.

[0029]

Fig. 8 is the patch 10 for scratch prevention in the first example is replaced by the roller 15. The remaining components have the same structure as those of the first example.

[0030]

Fig. 9 is an expanded view of the roller 15 for scratch prevention. The roller 15 for scratch prevention has rotary shafts 15a at the opposite sides thereof so that the shaft 15a is attached to a panel 24. The roller 15 is formed of a material whose hardness is lower than that of the DVD-ROM disk 1.

[0031]

Fig. 10 is a sectional view of the part of the roller 15 at the disk insertion and discharge slot 3 in the panel 24. In the disk drive unit using the roller 15 according to the second specific example, the roller 15 is attached to slightly project from the edge portion 3a of the disk insertion and discharge slot 3 in the panel 24 such that when the DVD-ROM disk 1 deviates from a normal position at the insertion or discharge of the disk medium 1, the disk medium 1 comes

into contact with the roller 15 and not the discharge slot directly, thereby protecting the data surface of the disk medium 1.

[0032]

At the insertion or discharge of the DVD-ROM disk medium 1, when the disk medium 1 comes into contact with the roller 15, the roller 15 rotates centered around the shaft 15a so as to follow the movement of the disk medium 1, whereby the data surface of the disk medium 1 will have no scratch caused by friction.

[0033]

[THE EFFECT OF THE INVENTION]

Being thus structured, the disk drive unit according to the present invention produces the following effects.

[0034]

First effect is that even in a case where a new medium whose outer periphery is too roughly finished to make the edge sandy is inserted into a disk drive unit which can be automatically inserted and discharged, when the disk medium pushes to open and pass through a felt of a drive panel disposed at a disk insertion and discharge slot, because catch between the disk medium and the felt will not be larger than medium discharging force of the disk drive unit, there occurs no troubles that the disk is not discharged but return into the

drive unit again and that it is stopped halfway.

[0035]

The reason is that because of the effects of the vertical slits provided in the felt, when the disk medium pushes to open and pass through the felt, the felt bends at a part of the vertical slit to suppress a wide range of turning over of the felt.

[0036]

Second effect is that a patch for preventing scratches on a medium provided at the panel of the disk drive unit hinders the medium from coming into contact with other parts than the patch, thereby preventing a trouble that a data surface of the disk medium is scratched.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[Fig. 1] Fig. 1 is an exploded perspective view of a panel of a disk drive unit according to the present invention.

[Fig. 2] Fig. 2 is an expanded view of a patch to be fit in the panel of the disk drive unit according to the first example of the present invention.

[Fig. 3] Fig. 3 is an expanded view of a felt to be attached to the panel of the disk drive unit according to the first example of the present invention.

[Fig. 4] Fig. 4(a) is a sectional view of the panel portion of the disk drive unit according to the first example of the present invention and, Fig. 4(b)

is a sectional view of a panel portion of a conventional disk drive unit.

[Fig. 5] Fig. 5 is a perspective view of the disk drive unit according to the first example of the present invention.

[Fig. 6] Fig. 6(a) is a perspective view for use in explaining a state where the disk drive unit according to the first example of the present invention discharges a disk medium and, Fig. 6(b) is a perspective view for use in explaining a state where a conventional disk drive unit discharges a disk medium.

[Fig. 7] Fig. 7 is a perspective view of a notebook-sized personal computer to which the disk drive unit of the present invention is applied.

[Fig. 8] Fig. 8 is a plan view of a panel portion of a disk drive unit according to a second example of the present invention.

[Fig. 9] Fig. 9 is a perspective view of a roller for use in the second example of the present invention.

[Fig. 10] Fig. 10 is a sectional view of the panel of the disk drive unit according to the second example of the present invention.

[THE DESCRIPTION OF THE NUMERALS]

- 1 disk medium
- 2 disk drive unit
- 3 disk insertion and discharge slot

3a edge portion of disk insertion and
discharge slot

- 4 cloth member
- 5 horizontal slit
- 6 vertical slits
- 9 convex portion
- 10 patch
- 13 operation button
- 14,24 panel
- 15 roller
- 15a rotary shafts of roller

[THE NAME OF DOCUMENT] ABSTRACT

[ABSTRACT]

[OBJECT] This invention is provide a disk drive unit which prevents troubles from occurring when a disk is inserted into or discharged from the device.

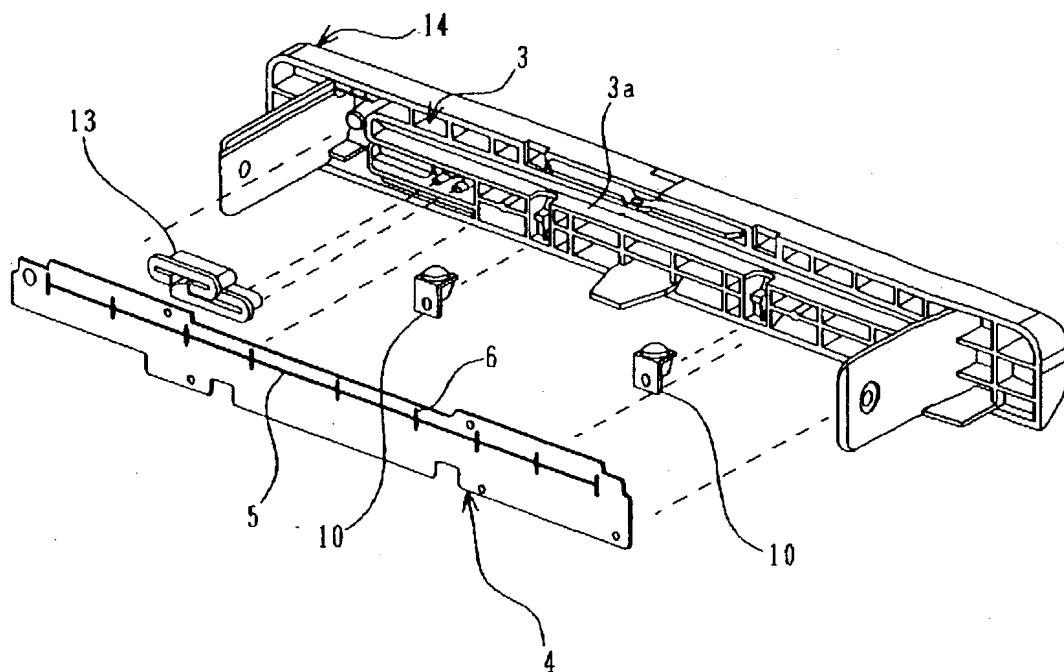
[CONSTITUTION] In a disk drive unit in which a felt for blindfolding is provided in the vicinity of a disk insertion and discharge slot into and from which a disk medium is inserted and discharged and a slit for insertion of the disk medium is provided in the felt along the longitudinal direction of the disk insertion and discharge slot, a plurality of slits are provided in a direction perpendicular to the slit 5.

[SELECTED DRAWING] Fig.1

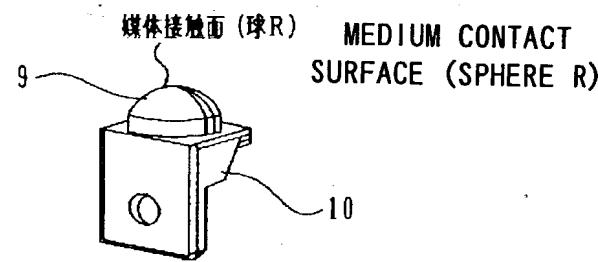


【書類名】 図面 [NAME OF DOCUMENT] DRAWINGS

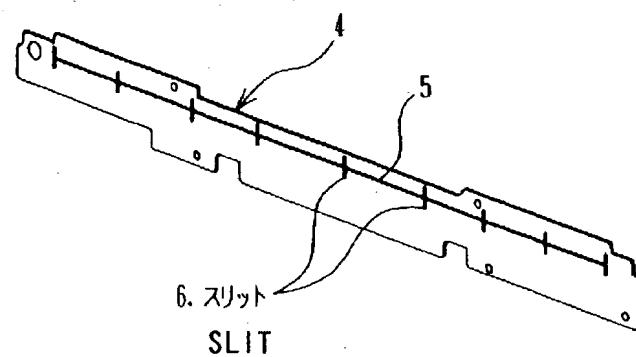
【図1】 FIG. 1



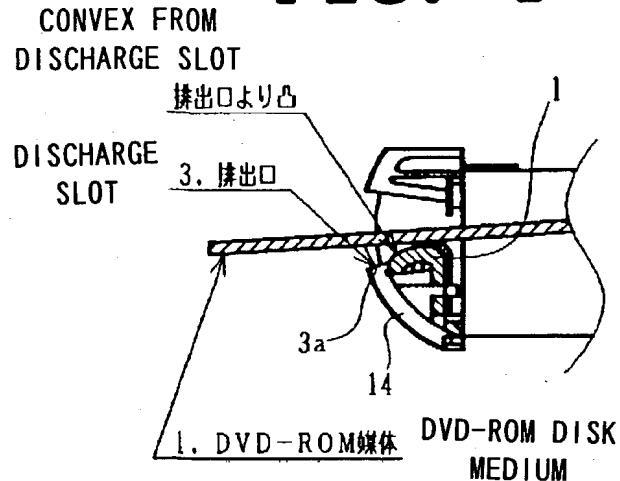
【図2】 FIG. 2



【図3】 FIG. 3



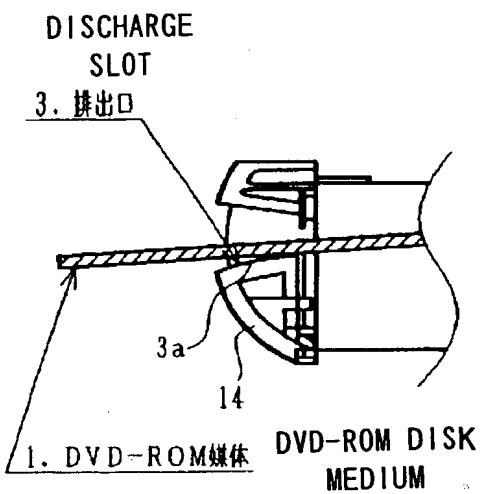
【図4】 FIG. 4



<傷防止パネル構造>

(a)

PANEL STRUCTURE FOR PREVENTING
SCRATCHES

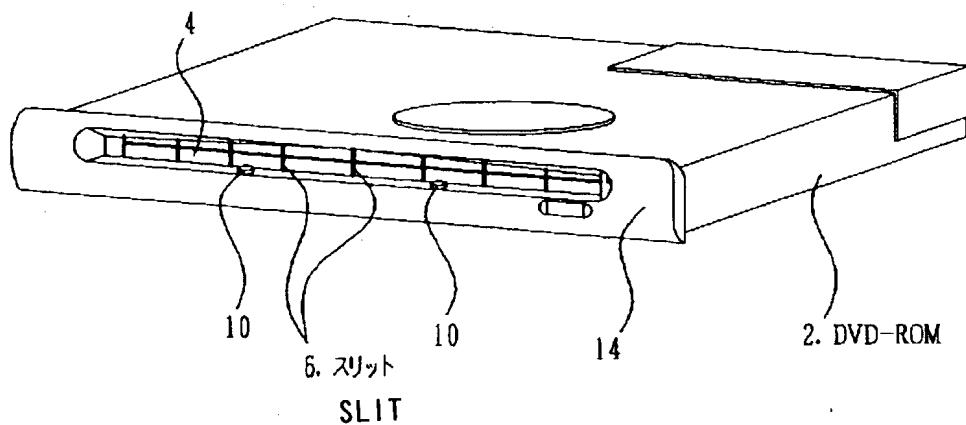


<従来のパネル構造>

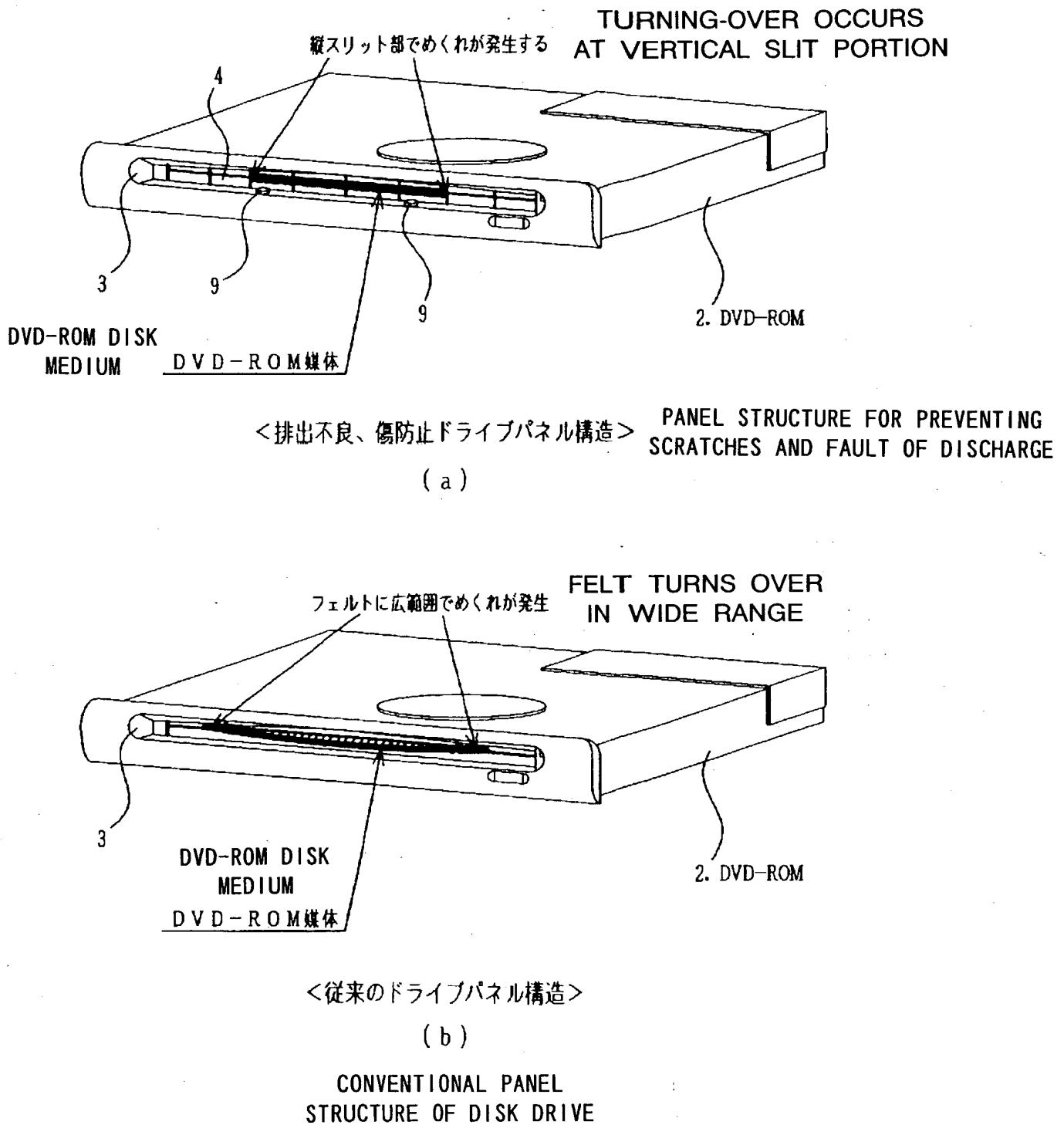
(b)

CONVENTIONAL PANEL STRUCTURE

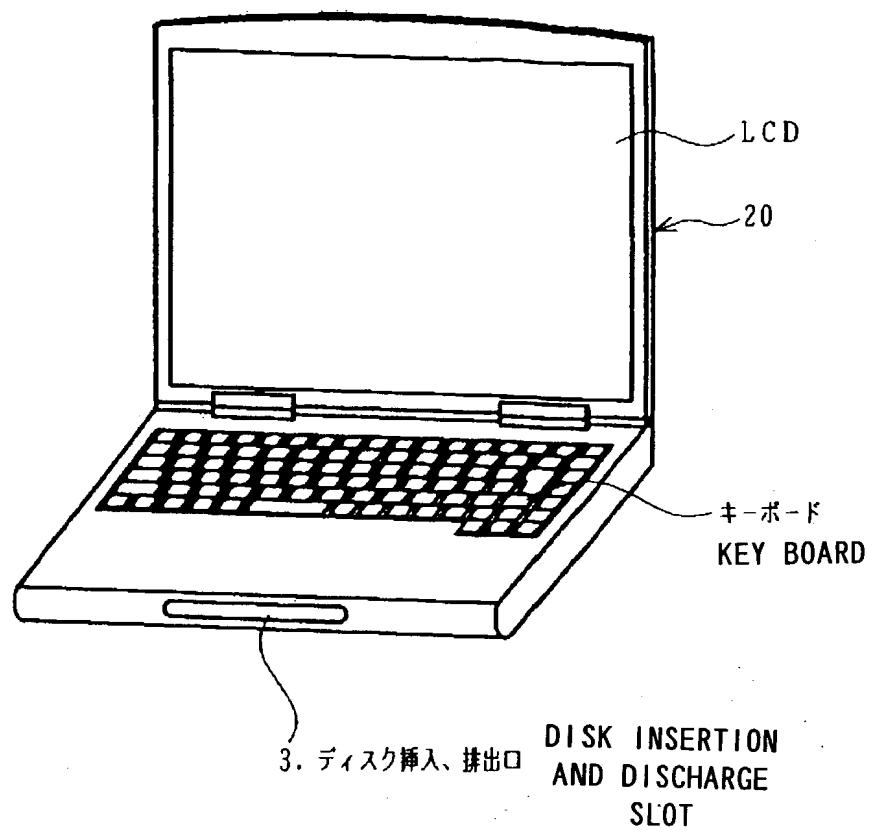
【図5】 FIG. 5



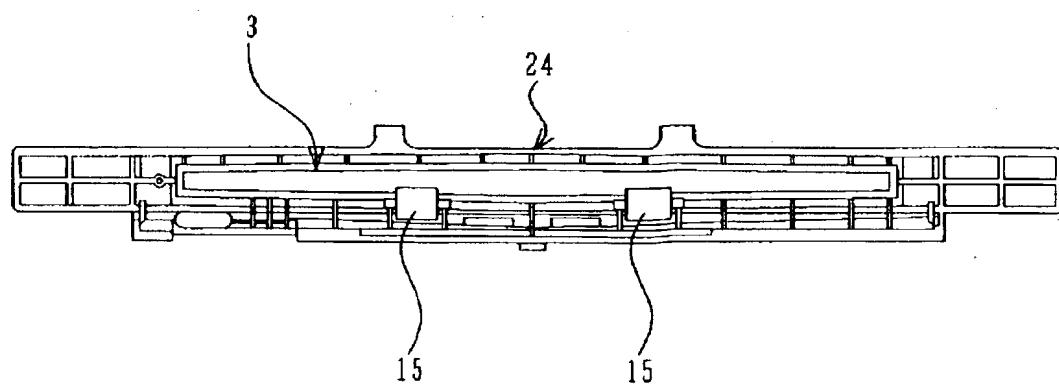
【図6】 FIG. 6



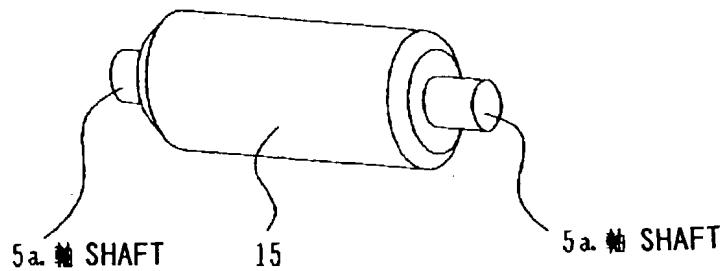
【図7】 FIG. 7



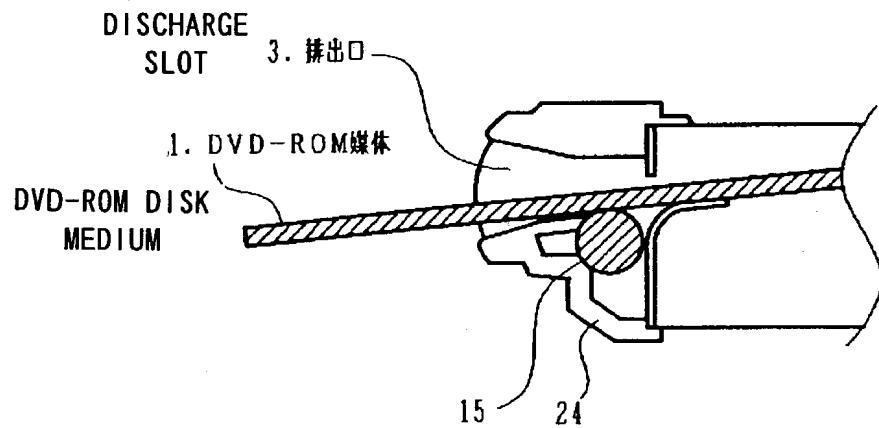
【図8】 FIG. 8



【図9】 FIG. 9



【図10】 FIG. 10



<傷防止パネル (ローラータイプ) >

PANEL FOR PREVENTING SCRATCHES
(ROLLER TYPE)